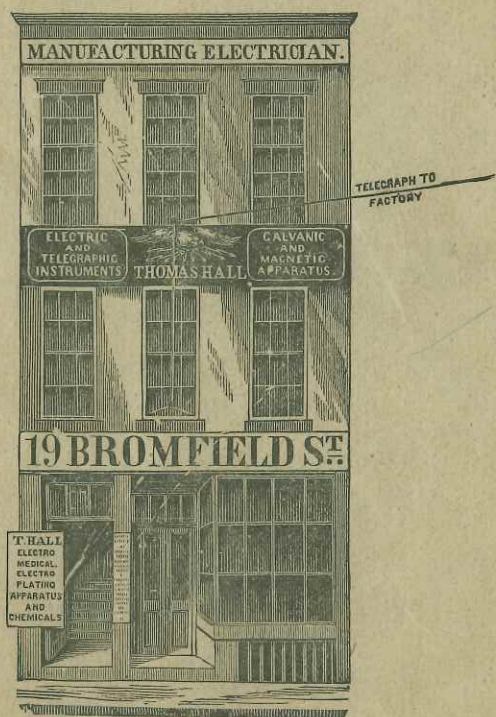


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607/65
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ILLUSTRATED CATALOGUE
— OF —

ELECTRO-MEDICAL INSTRUMENTS

MANUFACTURED AND SOLD, WHOLESALE AND RETAIL,
BY
THOMAS HALL.



NO. 19 BROMFIELD STREET,
BOSTON, MASS.

607/65

ILLUSTRATED CATALOG

Electro-Medical Instruments

THOMAS BLANK, MANUFACTURER

Scientific, Domestic, and Commercial Electrical

Apparatus, and Batteries

125 N. 3rd St. PHILADELPHIA

OF ALL DRUGGISTS

THOMAS BLANK

SOLE AGENTS FOR THE UNITED STATES

PHILADELPHIA

ESTABLISHED IN 1836, BY DANIEL DAVIS, JR.

ILLUSTRATED CATALOGUE
OF
Electro-Medical Instruments
MANUFACTURED AND SOLD BY
THOMAS HALL, ELECTRICIAN,
MANUFACTURER AND IMPORTER OF
Magnetic, Galvanic, Mathematical, Optical,
Philosophical, and Telegraphic
INSTRUMENTS,
OF ALL DESCRIPTIONS.

Tenth Edition.

BOSTON, MASS., 19 BROMFIELD ST.

1870.

NOTICE.

See Index of Prices, pages 40 and 43.

TENTH EDITION.

OWING to the great advance in the price of stock, workmen, materials, &c., the subscriber is obliged to increase his prices thirty per cent. above the prices stated in our former Catalogues, as everything used in connection with the business is higher by thirty per cent., and in many instances fifty per cent., than formerly.

We have prepared a Price List, numbered to correspond with the illustrations and figures, on the last pages of the Catalogue. Although there is no immediate prospect of prices being lower, at present, yet, if there should be any change, we can easily replace the list with new prices.

THOMAS HALL.

JULY 1, 1869.

TERMS.

I would recommend to my patrons to remit, in a registered letter, or by a draft payable to my order, or, as is generally done, have bills collected through express company, on delivery of goods.

Persons, when ordering goods, or sending for Catalogues, will please write their names and places of residence distinctly and fully.

Strangers ordering goods payable on delivery, must enclose five dollars with the order, which is to pay freight out and back provided the parties do not take the goods. We do not require this of old customers, or parties we know. The amount received with the order will be credited on the bill and sent with the goods, by express, to any part of the United States or Canadas.

TO WHOLESALE CUSTOMERS.

All claims must be made a short time after receipt of the goods, otherwise no allowance will be made.

Not accountable for breakage.

The amount of bill may be remitted by sight drafts on Boston or New York.

Insurance against breakage in transportation, two and a half per cent.

Marine insurance at current rates, from one to two and a half per cent.

All goods purchased will be packed with great care, with cost of box added to bill. As we always have a large stock of instruments on hand, we can fill orders immediately on reception. But it sometimes happens that we are out of some styles of instruments; in that case, we are obliged to delay the order until we can make them, which is never over two or three days, as we have long-experienced workmen, and best facilities for manufacturing.

TESTIMONIALS.

THE following are a few of the testimonials we have received from physicians and dentists who are now using our improved instruments:—

MR. HALL:

This may certify that I have used your Improved Helix and Patent Silver Battery most thoroughly, for some time past, alternating the work with several others which are daily used in my office, and am happy to say that I give a decided preference to this most beautiful and effectual new machine, for the particular cases and purposes to which it is adapted, over any or all others that I have ever used, or seen used, in this country or in Europe.

Yours respectfully,

ALFRED C. GARRATT,

9 HAMILTON PLACE, BOSTON.

THOMAS HALL:

Dear Sir:— We have used one of your Improved Helix for the past three months, and we find it works admirably. The battery has been in constant action since we first set it up, without any perceptible change. The instrument runs very smooth and still, which is a great advantage for applying it for the extraction of teeth.

We cordially recommend the instruments manufactured by you to be of superior workmanship, and better adapted for dentists' and physicians' use than any other instruments we have seen.

DR. H. I. DANIELS,

DR. WM. D. BROWN,

SURGEON DENTISTS, No. 17 BEDFORD STREET, BOSTON.

You sent me one of your Constant Batteries, some two years ago, when I was in Fitchburg, with a request that I should tell you how I liked it. My reply is, I have never had or seen one that run so *steadily, smoothly*, and satisfactorily, as that one.

Yours truly,

W. B. CHAMBERLAIN, M. D.

Your Batteries give better satisfaction than any other that have ever been used in this part of the country; and I think myself, they are the best ever made for general uses.

Yours truly,

J. ALLEN HUBBS,

DUNKARD, GREENE Co., PENN.

The above are only a few of the many testimonials we have received from the first physicians in America—having over one thousand on file, which we shall be most happy to show at our store,

15 BROMFIELD STREET,

BOSTON, MASS.

LIST OF PREMIUMS

Received by this Establishment since its Commencement
in 1836.

From the Massachusetts Exhibition and Fair, 1837:

FOR THE BEST APPARATUS, DIPLOMA AND SILVER MEDAL.

From the Massachusetts Exhibition and Fair, 1839:

FOR THE BEST APPARATUS, DIPLOMA AND GOLD MEDAL.

From the Massachusetts Exhibition and Fair, 1853:

FOR THE BEST APPARATUS, DIPLOMA AND SILVER MEDAL.

From the Massachusetts Exhibition and Fair, 1856:

FOR THE BEST APPARATUS, DIPLOMA AND GOLD MEDAL.

From the Massachusetts Exhibition and Fair, 1860:

FOR THE BEST APPARATUS, DIPLOMA AND SILVER MEDAL.

From the Middlesex Mechanics' Association, 1851:

FOR THE BEST APPARATUS, DIPLOMA.

From the Mechanics' Association (Tenth Exhibition), 1865:

FOR THE BEST ELECTRO-MEDICAL INSTRUMENTS,

THE HIGHEST PREMIUM DIPLOMA AND SILVER MEDAL.

GOLD AND BRONZE MEDALS,

Paris Exposition, 1867.

PREFACE TO CATALOGUE.

SIXTH EDITION.

THE manufacturing of magnetic and galvanic instruments was first commenced in this country by Mr. Daniel Davis, Jr., in the year 1836. Previous to that time, all the galvanic instruments used in this country were imported from Europe. Mr. Davis, having had an old induction coil to repair, saw the principle upon which it acted, and made one, for amusement, with some improvement upon the one he had repaired. He found a sale for it. This induced him to engage in the manufacture of them. At that time they were very rough and inconvenient instruments, compared with those we now make. They were very seldom used for medical purposes. The mode of breaking the current was by means of a ratchet, placed on the top, or by the side of the coil. This was a great objection to them for medical purposes, as the shocks came very irregularly: this was remedied by the invention and adoption of the vibrating armatures, in connection with the secondary coils, contrived by Mr. Davis. It is now universally used for this purpose, both in this country and Europe. By this ingenious arrangement the instruments are self-operating, and the current is extremely fine. Making induction coils led to making models for motive power, and various pieces of apparatus to illustrate galvanism and electro-magnetism.

The adoption of this branch of physical science in our colleges and schools created a constant demand for this class of instruments, so that we now manufacture over five hundred distinct instruments adapted to this branch of studies. For several years they were used only for illustrating the principles of galvanism, &c.; there not being any practical use for them except being occasionally used for medical

purposes. Like most new theories in medical science, this agent was extremely slow in coming into use among the medical profession. One of the greatest obstacles in the way of this agent was, that there were no books on this subject whereby a physician could inform himself how to apply electricity to various diseases. This defect is remedied now, to a great extent, there being some very valuable works on medical electricity, by some of the first physicians in Europe and America. Among the most prominent, stand the names of Golding Bird, of England, M. Duchenne and M. Becquerel, of France, Meddaldroff, of Germany, Dr. F. W. Channing and A. C. Garratt, M. D., of this city. This last gentleman has paid especial attention to electricity as a therapeutic agent, having constructed and devised a great many new and useful instruments in this department. We are greatly indebted to him for his suggestions and advice in the construction of the various instruments described in the following Catalogue. Many of them, and the manner of applying them, are original with him.

Dr. Garratt is the author of Garratt's celebrated book on Medical Electricity, containing eleven hundred and three pages, fully illustrated, and, without doubt, the best work published in the world on the subject.

Having been engaged with Mr. Davis, in the manufacture of these instruments, from 1840 until his retirement from business, in 1849, and subsequently successor to him, in the firm of Palmer and Hall, until 1857,—having had twenty-six years' experience, and possessing great facilities and conveniences for the manufacture of instruments in this line,—it is my intention that no efforts on my part shall be wanting to sustain the previous high reputation of these instruments, or to render them unsurpassed by any other maker.

THOMAS HALL.

HALL'S CATALOGUE.

Persons ordering, will please state the Number and Price of Instruments, and date of Catalogue.

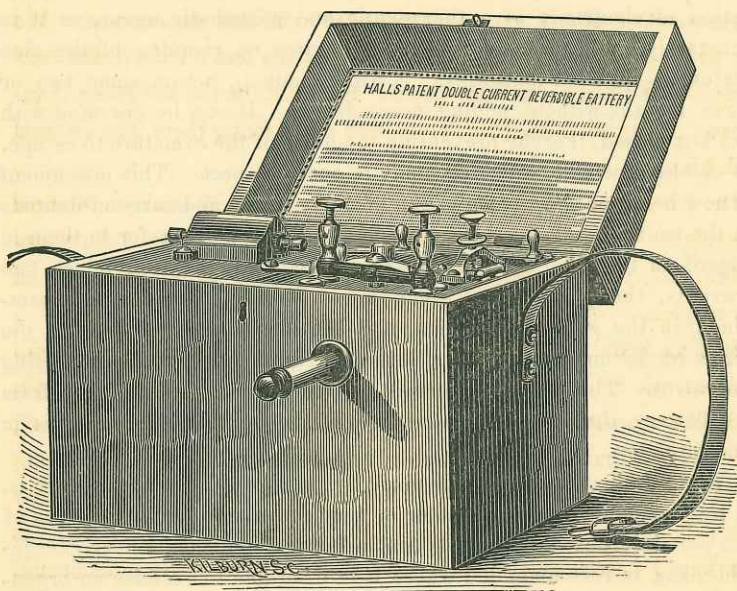


Fig. 1.

Hall's Patent Double-Current Reversible Battery.

Premium Instrument, Patented June 21, 1859.

The following is an extract from A. C. Garratt's celebrated work on "Medical Electricity:" "In regard to this instrument (page 371, fig. 63, represents Thomas Hall's celebrated electro-remedial instrument), it is a faradaic arrangement, run by a Smee battery. Enclosed in a small, hard wood box, it is clean, durable, and economical.

It will run a week or two, or even a month, according to the amount of work it is required to perform, without repairing or cleaning; but it is always best and most economical, in using any of Smee's batteries, to re-amalgamate the plates with quicksilver, and make a new solution (composed of ten ounces of water to two of sulphuric acid) every week or two.

"This instrument is also provided with switches, pole changer, and covers, which render it convenient and tidy; and as it affords two kinds of electrical currents, the common faradaic, and also the extra current, and sufficient primary current for electro-puncture, it is recommended as the best American electro-medical battery, especially for office use."

For remedial purposes, designed for physicians' and dentists' use, this is a decided improvement over all other instruments for the application of electricity as a therapeutic and anæsthetic agent, as it is constantly ready for operation, and requires no cleaning of the zinc plates, as in other batteries. It will remain in action some two or three months without adding new solution. It can be operated with the box closed, thereby preventing the noise of the armature to escape. It is also portable, and well made in every respect. This instrument is now being used by some of the first physicians and surgeon-dentists in the country, who have very kindly permitted me to refer to them in regard to its merits. This instrument is arranged to produce two currents, the primary and secondary. Both the currents are combined in the same instrument, and can be brought to bear on the directors by merely moving a lever or switch, without disconnecting the wires. The primary current is that which comes direct from the battery, through the coarse wire of the helix, consequently is in one direction.

When the battery current is made to flow through the body, there is, at the commencement, a greater or less convulsion of the muscles of the part interposed, though its continued passage may be nearly insensible, and is recommended where it is desirable to exercise an organizing power over the muscles, also for various internal diseases.

The secondary, or interrupted current, is of high intensity and of small quantity, and proceeds from the fine wire (which surrounds the coarse wire), which is induced from the battery current flowing through the coarse wire, and is used for rheumatic and nervous diseases. This instrument is so constructed that it can be operated with the box shut, thereby preventing the noise from the vibrating armature, and also keeping the instrument free from dust.

One of the most useful arrangements constructed with this instru-

ment, is the simple convenience for changing the poles from one electrode to the other; to do this, you merely move the bar of wood to which the wires are attached by means of the screw cups, one half inch to the right or left, and it instantly changes the current from one electrode to the other. This avoids the necessity of changing the handles, which is a great advantage in applying electricity, and is the only instrument in the world that has a pole changer attached.

The instrument is contained in a well-finished black walnut box, with straps to carry it. Dimensions of box, seven and a half inches high, nine and a half inches long, and seven wide. The base is highly polished, and the metal work is silver plated. Size of glass jar to Fig. 1, six inches long, three and three fourths wide, four and one half deep; size of zincs, five inches long, five and one half wide, one half inch thick.

They are made of the best distilled zinc. As the glass jar and zincs are the only parts that are liable to break or wear out, we have given the exact dimensions; so that by sending the above dimensions it will avoid mistakes. Price of glass jar, \$1.00; price of zincs, \$1.00. This instrument is complete, in black-walnut boxes, including Hall's flexible conducting cords, and albatum directors.

DIRECTIONS FOR SETTING UP AND USING HALL'S PATENT REVERSIBLE BATTERY.

Raise the zincs out of the box, then fill the glass vessel within one inch and a half of the top with water, then add one ounce (or two table-spoonfuls) of sulphuric acid, replace the zincs in this solution. Connect the two German silver levers in the slots of the posts opposite, by crowding them in the slots, being sure that they make good contact. This brings the battery in connection with the instrument, which will immediately vibrate the armature. It is well to give the armature an impulse with the finger, if it does not start of its own accord.

Disconnect the battery by removing the levers from the posts, when not in use, as the zincs are only in action when the levers are in the posts.

The battery consists of amalgamated zincs and platinum. The zincs are prepared with mercury, being first immersed in a solution of sulphuric acid and water—about one tenth acid to water. This solution thoroughly cleans the zincs so that the mercury amalgamates with them. It is well to rub the mercury on with a piece of cloth, or an old tooth brush. Care should be taken to keep the plates well

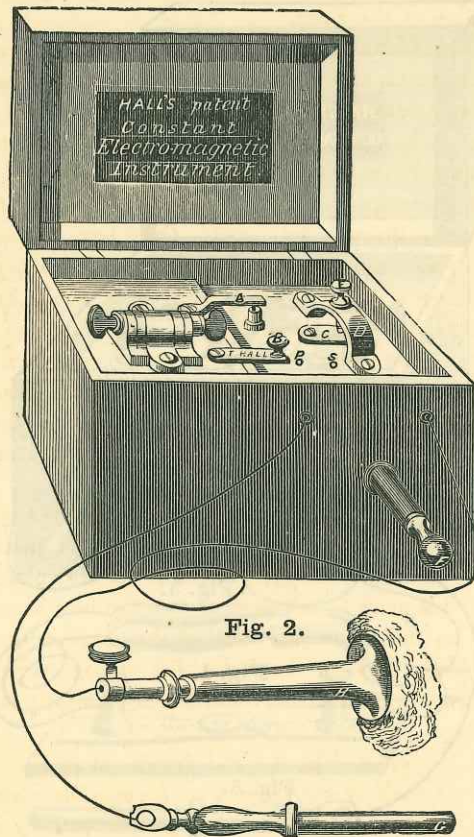
coated with mercury, as the action of the battery depends greatly on the amalgamation of the zincs.

Do not let the platinum, or centre plate, touch the zincs, as this would stop the action of the battery. The battery is ready for use, having been amalgamated previous to selling, but it would be as well to re-amalgamate them after a week's use, as the mercury does not thoroughly penetrate the zincs the first time amalgamated.

Connect the directors to the flexible cords by means of the screws, pass the other ends through the eyelets of the box, and connect them with screws on pole-changer bar. By this arrangement you can shut the box entirely up and still operate—the four knobs being marked *P* and *N*, to represent the positive and negative pole of the battery. If, after using it some time, the current grows weak and feeble, look at the zinc plates, if they look black, they need re-amalgamating; if they are bright and well coated with mercury, the solution must be at fault. Throw away and prepare new, and the instrument will operate with renewed vigor.

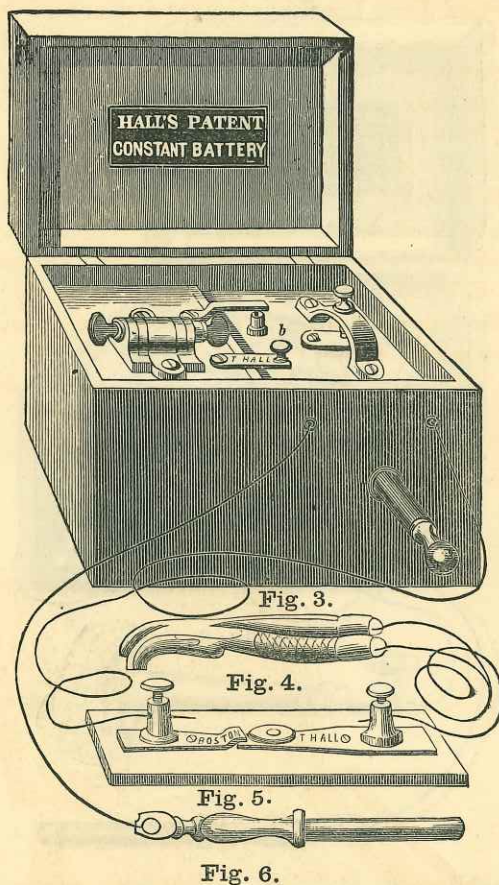
After having seen that the zincs are in order, and the solution being made according to directions, if the instrument still refuses to operate, the fault must be in the vibrating armature, which is placed under the arch of brass; this must be adjusted so that the iron hammer is about a sixteenth of an inch from the face of the magnet, then screw the spiral spring down, so as to touch the flat spring, then tighten the screw by the lower nut, and there will be no difficulty in the instrument's operating.

The current is regulated by the rod drawn out of the large eyelet-hole. When it is entirely out there is no perceptible current; as you insert the rod it increases the current until it is entirely in; then the instrument is at its full strength. The manner of bringing the secondary and primary currents to connect with the directors, or cords, is done by a switch on the base of the instrument. When the switch is on the knob of brass marked *S*, you get the secondary current, which is very powerful; when on the knob marked *P*, the positive current is in connection. The different currents are changed in our instruments by moving the switch from one knob to the other.



Hall's Patent Constant Electro-Magnetic Battery.

Fig. 2. This instrument is precisely like Fig. 1, with the exception that it is smaller, and without the pole changer. It is contained in a box nine and one half inches high, and seven wide; the only difference being in the height of the box—it is equally as well finished, but not silver-plated, and costs two dollars less. Size of glass jar, six inches long, four wide, and four high; size of zincs—length, five inches, depth, four and a quarter, thickness, one half inch. As the platinum, or inside plate, sometimes gets out of order, or looks white, it needs replatinizing; it is necessary to send them to us, or to some one who understands how to replatinize them. If they get entirely worn out, we can send a new plate, which can easily be soldered on in place of the old one, and thus save the expense of sending the whole battery to us. Price, \$2.00.



Hall's Patent Constant Battery,

With Forceps, for Extracting Teeth without Pain.

The above engraving represents the instrument complete in box.

Fig. 4. The Forceps, and manner of connecting with footboard and handles.

Fig. 5. Hall's Improved Footboard. This is a break-current footboard. Its operation is exactly opposite to the common arrangement for this purpose. When the foot is on the board there is no current. The moment the foot is raised the spring touches the upper connection and closes the current. By this arrangement the operator is not obliged to stand in one position, but can walk all around the chair and still have the current on the tooth.

Fig. 6. German Silver Handles, which the patient holds in the hand. The conducting cord, which leads from the footboard to the forceps, is forked, so that it can be connected with both handles of the forceps, which is sure to make good connection at the ends of the cords; it is fastened by two pieces of rubber. The current is graduated by removing the regulator from the centre of the helix.

Care should be taken to insulate the gums and cheeks from the forceps, so as to cause all the current to go to the tooth. A slight current is found best to produce the desired effect. The same directions as for Nos. 1 and 2 answer for this battery.

We have the forceps, footboard, and handles separate, if wanted to connect with other batteries.

No. 3, 4, 5, and 6 are, without doubt, the best and most effectual instruments for extracting teeth without pain, as we have an abundance of highly flattering letters to show, from some of the first physicians and surgeons in this country.

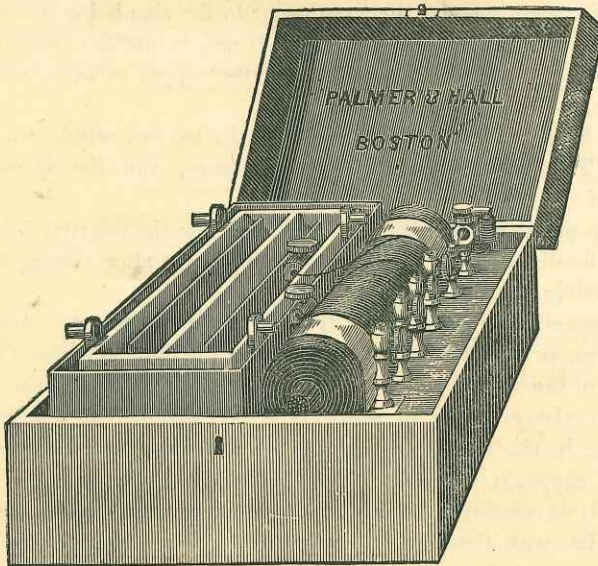


Fig. 7.

Dr. Page's Portable Battery.

Fig. 7. This is very powerful for its size. It is contained in a black-walnut box, five inches high, seven wide, and nine long. It

consists of coil, five inches long and two inches in diameter, with square battery, handles, and flexible wires.

DIRECTIONS.

1. Connect the wires as represented in the cut.
2. The solution to be used in this battery, is one of sulphate of copper (blue vitriol), containing about two ounces of blue vitriol to a pint of water. To prepare it, a saturated solution is first made, and to this solution is then added as much more water.
3. The zinc plate becomes coated in the battery, so that it is necessary to clean it after using it, whenever the metal has become thickly furred. The coating should be removed each time, so as to expose again the bright surface of the zinc.
4. If the electro-magnetic apparatus will not operate, see first if any spark is perceptible on rubbing the extremities of the wires from the battery together. If not, the battery is in fault. This may be owing to a sediment of copper at the bottom of the battery, making a connection between the zinc and copper, or to the zinc being somewhere in metallic contact with the copper; or it may be owing to the foulness of the zinc plate, or to the weakness of the copper solution, which, in that case, will have lost its color.
5. A bundle of iron wires is shown in the cut within the inner helix. This can be removed at pleasure, and the shock thus regulated.
6. The positive pole may be determined from the negative by taking the handle-directors in the hands, the negative always being felt the most sensibly.

We generally recommend Dr. Page's battery to private individuals or families, as they do not wish to use it all the time — perhaps merely one day of the week; then it is only necessary to keep the zinc clean, and it is always ready to use. It is very simple; no acid used in operating it, the solution being one of the salts (blue vitriol, or sulphate of copper); if it is spilt on the clothes or carpet it will do no harm. It is preferred to any other battery by some physicians who are familiar with that kind of instrument. We have sold hundreds, and have sent them to every part of the world, and they have invariably given entire satisfaction. Handles, and flexible cords, and full directions to operate the battery, accompany each instrument.

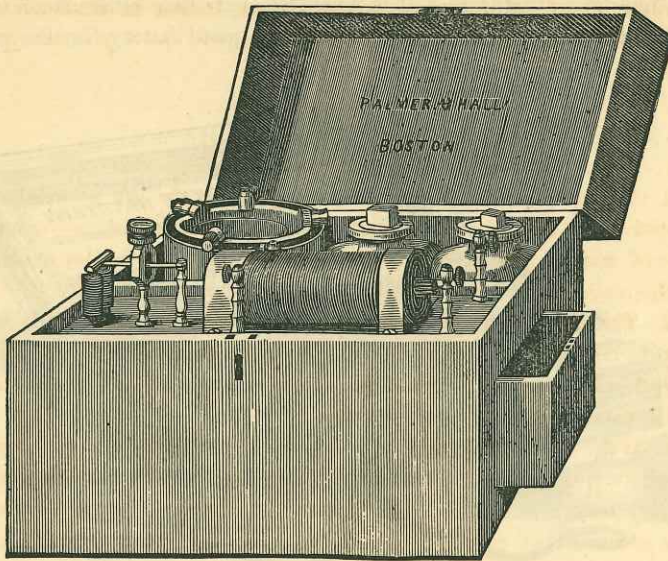


Fig. 8.

Single Coil Instrument.

Fig. 8. Single Coil Instrument, in black-walnut box, with drawer to contain directors, wire, &c; large size, designed for physicians' and family use, containing ground stopper bottles for solution. Same directions as for No. 7. This instrument is nicely made and beautifully finished.

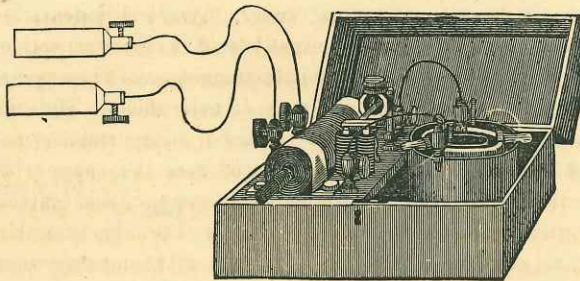


Fig. 9.

Family Battery.

Fig. 9. Coil and Battery in Box, for Family Use; very convenient form. It is contained in a box six inches wide, six and a half deep,

and nine and a half long. It is much cheaper than either No. 7 or 8. It has a round cylinder zinc, and is a very good battery for the price.

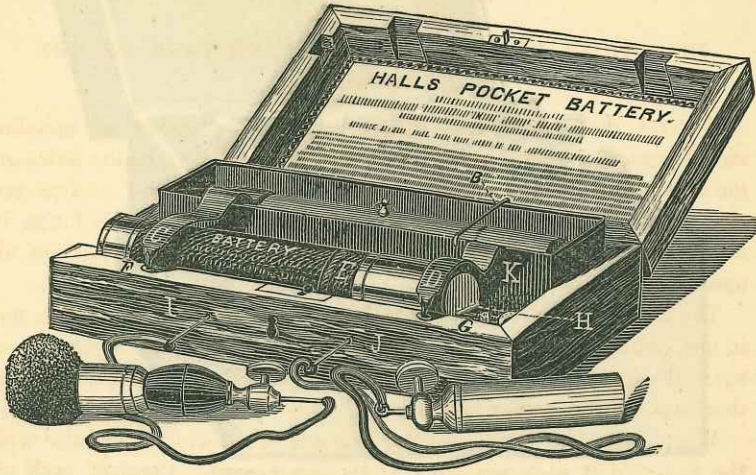


Fig. 10.

Hall's Patent Pocket Battery.

Fig. 10. Hall's Patent Pocket Battery, contained in a neat black-walnut box, eight inches long, five and a half inches wide, two inches deep; thus occupying no more space than a common book, it can easily be carried in the coat pocket. It is very powerful, and one of the most convenient batteries we make. It is so well made and simple that it cannot get out of order. And it is impossible to connect it wrong, as all the parts are made to fit in their respective places. Every physician ought to have this instrument, as it is so portable that they can use it in their practice out of their office. The zinc is so constructed that it can easily be cleaned, being nothing more than a straight bar of zinc, and is insulated from the copper by means of a new insulation, on the bottom of the copper dish instead of the top, as in all other batteries. The zinc is the only part that wears out, and this can be obtained in any part of the country where there are foundries, as it is only a bar of zinc weighing one pound. *K* is the copper dish to hold the solution, *D* is the connection from the copper to the helix, *C* the connection from zinc to helix; they fit into an eyelet on the edge of the box, marked *F* and *G*. *E* is the helix, made of the softest insulated copper wire. *H* is the vibrating armature, so constructed that it cannot get out of order. *I* and *J* are the

eyelets to receive the pins of the connecting cords, marked *P* and *N*, to designate the positive and negative poles. This is one of the most salable batteries we make.

DIRECTIONS HOW TO USE AND TAKE CARE OF THE INSTRUMENT.

Connect the battery with the instrument by means of metallic straps; insert the pin on the end of the strap in the metallic holes on the edge of the box; see that the ends of the pins and sockets are clean, in order that there may be good connections. The solution is composed of sulphate of copper (blue vitriol) in the proportion of one ounce to a pint of water.

The zinc becomes coated in the battery; hence remove it when not in use, and when dry scrape clean with an old knife, so as to expose again the bright surface of the zinc — as this is apt to make connection between the copper and zinc.

When first connected, give the hammer at the end an impulse with the finger, if it does not start of its own accord. Connect each of the metallic handles on one end of the cord by means of the binding screws, then insert the pins on the other end of the cord in the eyelet in the front of the box; crowd them in well, so as to make good contact.

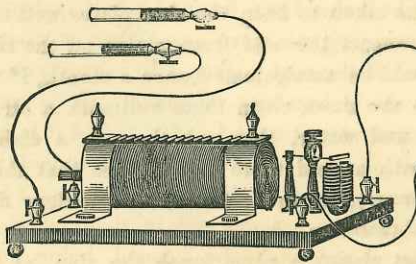


Fig. 11.

Double Helix and Vibrating Electrotome.

Fig. 11. Double Helix and Vibrating Electrotome, with Battery and Handles, neatly mounted on rosewood base.

We make several sizes of Fig. 11, varying in price from eight to fifty dollars. The fifty-dollar Helix is enclosed in a silver-plated case, with ebony heads, mounted on white marble base. It is made in the best manner, and has the pole changer, and double-current switch with graduated rod, and is a splendid office instrument.



Fig. 12.

Self-sustaining Battery.

Fig. 12 is the Battery used in connection with Fig. 11. It is a self-sustaining battery, and can be placed either on the table or in a drawer out of sight. It is always ready for use, and requires little care in its management, the zinc plates not requiring any cleaning. It consists of amalgamated zinc and platinum, with sulphuric acid and water for a solution (about one twentieth acid to water).

Care should be taken to keep the zinc plates well coated with mercury, as that prevents the acid from acting on the zinc only when in use. They should be amalgamated once a month, if used constantly. To amalgamate the zincs, clean them well with a strong solution of sulphuric acid and water, then rub them in a dish of quicksilver, rubbing it on with an old tooth brush. See that the zincs are well coated with mercury, as the action of the battery depends a great deal on the amalgamation.

Do not let the platinum plate touch the zinc, as that would stop the action of the battery.

Disconnect the battery from the instrument when not in use.

This battery is peculiarly adapted to dentists' use, as it is always ready, day and night, and there is no cleaning of the zincs, as in the sulphate of copper batteries. It is also the battery used by dentists for gilding their plates.

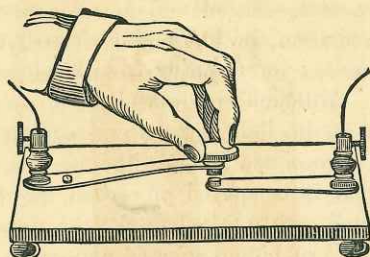


Fig. 13.

Key for Letting on Currents.

Fig. 13 represents a Footboard for letting the current on the forceps by the foot or hand; a very convenient method of operating, as you need no assistant. This is connected by the wire in between the instrument and the handle, which the patient holds. By pressing the spring down, it closes the circuit; by releasing the pressure, the current is broken. By this arrangement you can let the current on at pleasure.

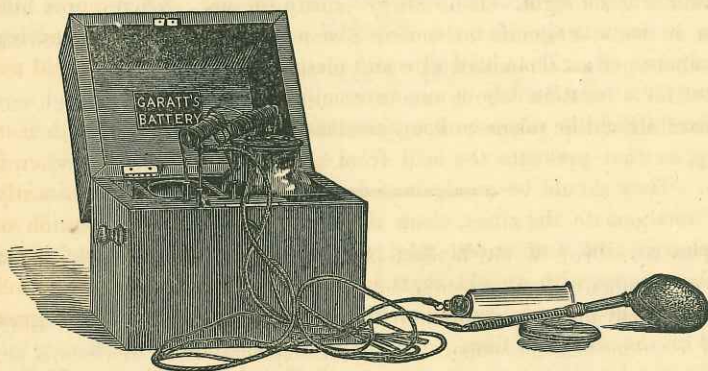


Fig. 14.

Hall's Petit Battery.

We quote from Dr. Garratt's work on "Medical Electricity" a description of this battery: "This is the most powerful, compact, and portable little battery of any description that is produced in this country. It is made by T. Hall, 15 Bromfield Street, Boston, and is for sale by all surgical instrument dealers in the country. It is the only faradaic apparatus here made that yields only the extra current. It is most profoundly penetrating and chemical-acting. It thus is

capable of being a most efficient aid in coldness and paralysis for quickening the circulation, and thoroughly electrifying and polarizing the nerves and muscles; for arousing from local palsy, or from suspended animation. Although so powerful, it is completely controllable. The strength of the inducing battery regulates the activity of this apparatus in a degree, and is much like the French battery made by Grenet. The pair is composed of carbon for the positive pole, and zinc amalgamated with quicksilver for the negative pole; while the charge is a solution of bi-chromate of potassa in dilute sulphuric acid. The solution is made thus: First take out the pair and place it in the receptacle, which is a lead cup; pour into the glass battery-cup about six ounces of water (or two thirds full), and to this add one ounce of clear sulphuric acid (two to four table-spoonfuls), and add two drachms of powdered bi-chromate (a tea-spoon even full). Now this is a powerful charge, and entirely unsuitable for some cases; one half or one quarter the acid and bi-chromate, or less, is all that is required for the painful and more delicate cases. As soon as possible after use remove the pair, rinse it and place it in the lead receptacle, and close the battery-cup water tight. It is thus safe to carry in the carriage, or to take in the hand to the bedside. When the solution becomes green or blackish, it is to be thrown out. When a new solution is made, it should be cool before putting in the carbon and zinc amalgam pair. Thus it is all ready for use.

"Hall's Petit Battery is unquestionably the most portable and most powerful for this purpose of any made in this country."

Fig. 15. Prof. W. R. Wells's Double-Current Electropathic Instrument, producing two currents, the primary and secondary.

This instrument is similar to Fig. 7; it has the same style battery, and is connected the same. The helix is placed under the board, and the armature and connections are on the top. The current is regulated with the rod drawn out of the side of the box.

Probably there are more of these batteries used in the West than all other kinds together, as Prof. Wells and Dr. S. M. Wells are constantly travelling throughout the West and disposing of their instruments. Prof. Wells's book of instructions accompanies each instrument.

This instrument possesses decided advantages over the single-current instruments, as both the currents are combined in the same instrument, and can be brought to bear on the directors by merely moving a switch or lever, without disconnecting the conducting wires.

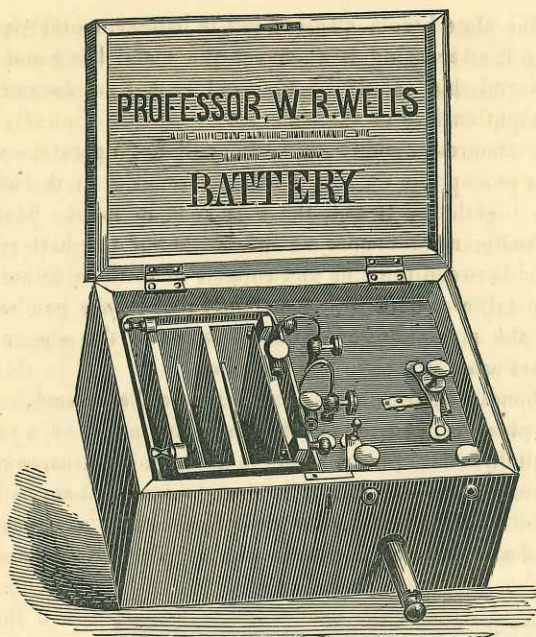


Fig. 15.

Prof. Wells's Battery.

The primary current is that which comes direct from the battery through the coarse wire of the helix. The secondary, or interrupted current, is of high intensity and of small quantity, and proceeds from the fine wire (which surrounds the coarse wire), which is induced from the battery-current flowing through the coarse wire. This instrument is so constructed that it can be operated with the box shut, thereby preventing the noise from the vibrating armature, and also keeping the instrument free from dust.

Primary. — To get the primary current, move the switch which connects with the screw-post on the brass knob marked *P*.

Secondary. — To get the secondary current, move the switch on *S*.

☞ Be careful to keep all the connections about the instrument clean and bright.

DIRECTIONS.

1. Connect the wires from the battery-screws to the screw in the instrument.

2. The solution to be used in this battery is one of sulphate of copper (blue vitriol), containing about two ounces of blue vitriol to a pint of water. To prepare it a saturated solution is first made, and to this solution is then added as much more water.

3. The zinc plate becomes coated in the battery, so that it is necessary to clean it after using it whenever the metal has become thickly furred. The coating should be removed each time so as to expose again the bright surface of the zinc.

4. If the electro-magnetic apparatus will not operate, see first if any spark is perceptible on rubbing the extremities of the wires from the battery together. If not, the battery is in fault. This may be owing to a sediment of copper at the bottom of the battery, making a connection between the zinc and copper, or to the zinc being somewhere in metallic contact with the copper; or it may be owing to the foulness of the zinc plate, or to the weakness of the copper solution, which, in that case, will have lost its color.

5. The bundle of iron wires is to regulate the current. It can be removed at pleasure, and the shock thus regulated.

6. For full directions for operating in different diseases, consult Prof. Wells's Lectures, which teach a reliable and scientific theory of diseases, and a method of their cure by the use of electricity unknown to medical men and all others except those who have been instructed by him.

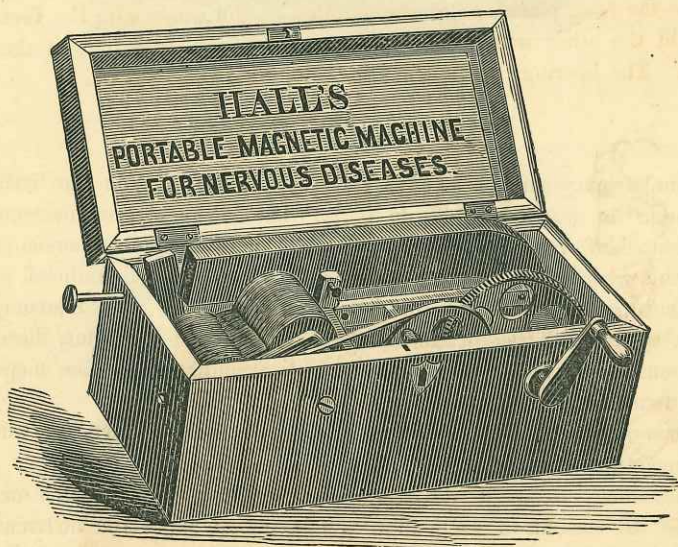


Fig. 16.

Hall's Portable Magnetic Machine.

Fig. 16. Hall's Portable Magnetic Machine for Nervous Diseases. These machines are preferred by many, as there is no acid used to excite the current. You merely turn a crank. They are very simple

in their construction, and are better made than the ordinary machines sold. We manufacture them ourselves, and take particular pains to have them perfect in every respect. They are warranted to be as represented.

DIRECTIONS.

Connect two metallic cords or wires with the sockets in the ends of the box, and apply the handles connected with the other ends of the cords or wires to any part of the person through which it is desirable to pass the current of electricity. Then turn the crank, regulating the strength of the current by the speed, and by the knob at the end of the box—it being desirable to increase the strength only to that degree most agreeable to the patient. It is less unpleasant to the patient if wet sponges are placed in the end of the handles and these applied to the skin, as they prevent the prickling sensation. These should never be put inside the box while wet, as they rust the machinery. In applying it for the toothache, tic-douloureux, or neuralgia, the operator takes one handle and places his fingers or sponge over the part affected, while the patient holds the other handle. In applying it to the foot, place one of the handles in the water with the foot and hold the other in the hand, or apply it to any other part of the person. The bearings and springs must be oiled occasionally.

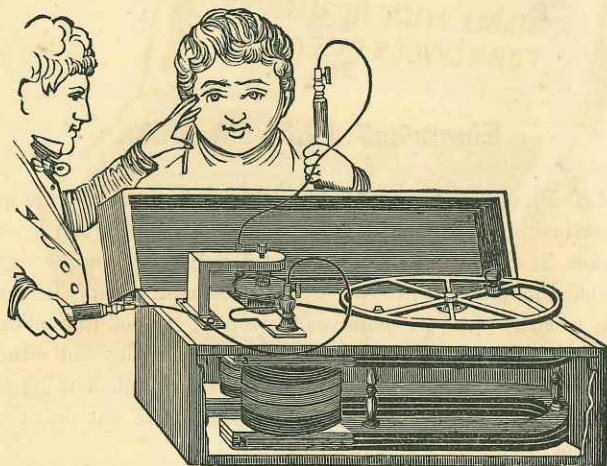


Fig. 17.

Large Machine for Hospitals.

Fig. 17. Large Size Magneto-Electric Machine for Hospitals and Institutions. The advantage that this instrument possesses over the

induction coils is, that there is no battery—it is always ready; by turning the crank you produce a current. This is used very extensively in Europe, but we do not think it gives so steady a current as the instruments worked with the battery.

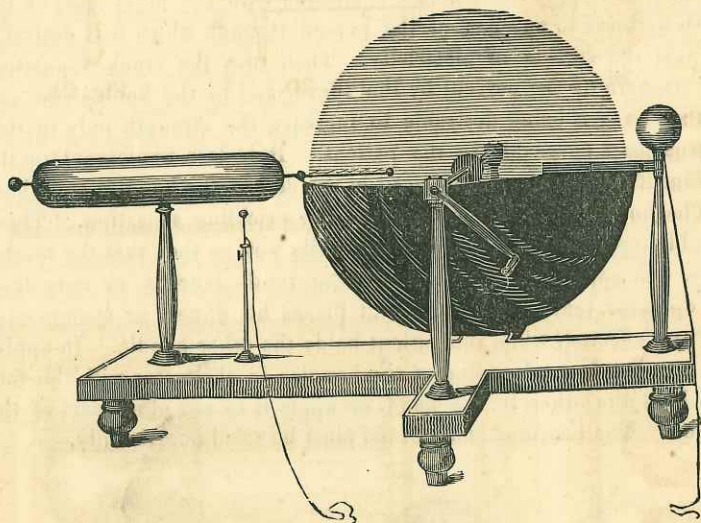


Fig. 18.

Electrical Plate Machine.

Fig. 18. Plate Electrical Machine, finely mounted, for the production of statical or functional electricity, from a plate sixteen by twenty-four inches in diameter. The base is of mahogany, supporting insulated pillars, mounted with two brass bases and cups. The axle of the plate revolves in two balls on the top of two of the pillars, and the prime conductor and rubber are supported by the other two. The crank is insulated. The conductors are all polished lengthwise, or telescope-finish, and there is no difference in the finish of the several sizes.

We make several sizes of Fig. 18, — diameters of plate from sixteen to thirty-six inches. They are used very extensively when it is necessary to charge the patient with electricity.

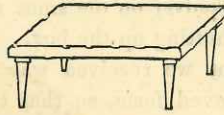


Fig. 19. Leyden Jar, for shocks.

Fig. 20. Insulated Stool.

Fig. 21. Discharger.

The Leyden Jar, Stool, and Discharger accompany each machine.

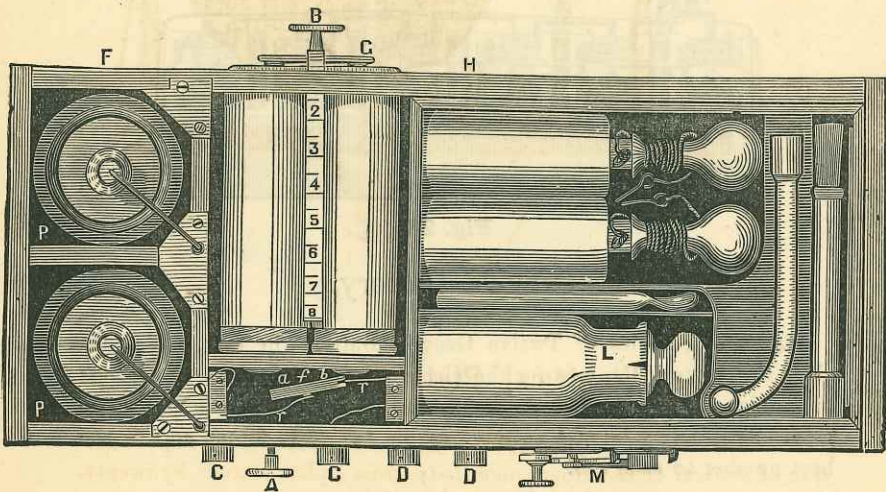


Fig. 22.

Ruhmkoff's Battery.

Fig. 22 represents Ruhmkoff's celebrated apparatus. We do not make this instrument, as we can import them from Paris cheaper than we can manufacture them. They are splendidly made, and contained in an elegant polished box. It is not so large as this book, and is not liable to break or get out of order. The helix is constructed of very fine copper wire, which is covered with a silver shield that regulates the strength of the current at P. P. There are two carbon cups, in which we place about twenty or thirty grains of the bi-sulphate of

mercury from the bottle L. This is moistened with only one tea-spoonful of water in each cup, and then the zinc, hanging by their side stems, is fastened into the metallic holes in the partition of the box, and the armature, *a, b*, will instantly commence to vibrate. Has it run for an hour, then the cups must be cleaned, and when put away the accumulated quicksilver on the zincs must be shaken off, and the whole made dry for shutting up the box.

The last instrument we received was constructed with only one helix, being an improved form, so that they are somewhat different from Fig. 22, but in the main they are just the same thing. They cost much less and are just as good. They are a splendid instrument for carrying to the bedside.

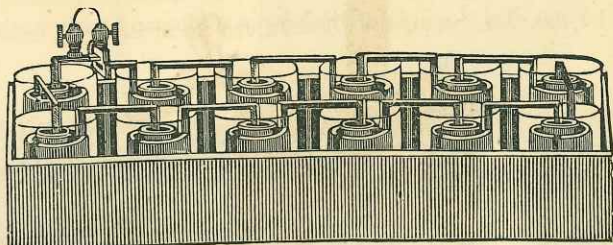


Fig. 23.

Grove's Battery.

Fig. 23. A Series of Twelve Grove's Battery, in Box. We consider this battery the best for the electro-chemical baths. It consists of amalgamated zinc and platinum, excited with sulphuric and nitric acid. It is a very intense battery. From twelve to fifteen cups is the best number to each tub.

DIRECTIONS.

Fill the glass jars with water within one and a half inches of the top; then add one half ounce of sulphuric acid; stir it up well with a stick; set the zinc in the jar, and the earthen or porous cup in the zinc; fill the porous cup with nitric acid within one half an inch of the top; place each platinum strip in the nitric acid, or porous cup, as shown in the cut above; connect wires with each end of the battery, then touch the ends of the wires together, — if there is a spark, the battery is in good order.

Care should be taken to keep the zincs well coated with mercury, as that prevents the acid acting on the zinc only when in use. They should be amalgamated once a week, if used constantly. To amalga-

mate the zincs, you clean them well with a strong solution of sulphuric acid and water, then rub them in a dish of quicksilver, — put it on with a brush. See that the zincs are well covered with mercury, as the action of the battery depends a great deal on the amalgamation.

This battery will work from eight to ten hours with a constant current. It is best to soak the porous cups in water after using, as it frees them from the old acid.

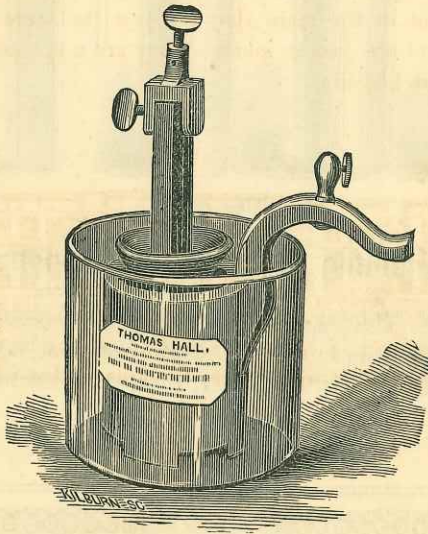


Fig. 24.

Hall's Improved Carbon Battery.

Fig. 24. Hall's Improved Carbon Battery. This is the same size as Grove's, same zinc, tumbler, and porous cup, but we use a preparation — gas carbon or coke — instead of platina. The solution is composed of sulphuric acid, one ounce; water, seven ounces; bi-chromate of potassa, three drachms. It is called, in this country, Electropion Fluid, but it is nothing new, as it has been used for years in Europe. Our improvement consists in a brass connection on the carbon. This can readily be shaken from the carbon and cleaned bright, which is very necessary, as it is apt to corrode, and this renders the connections imperfect. It is not so powerful as Grove's, is of more quantity, and not so intense, and is about one third as strong as Grove's battery. It will work a month or six weeks without changing the solution. They are preferred to Grove's on account of sustaining qualities, and

there are no disagreeable fumes arising from them. They are connected in series of ten to twenty, by means of a copper connecting wire, leading from carbon to zinc, alternately.

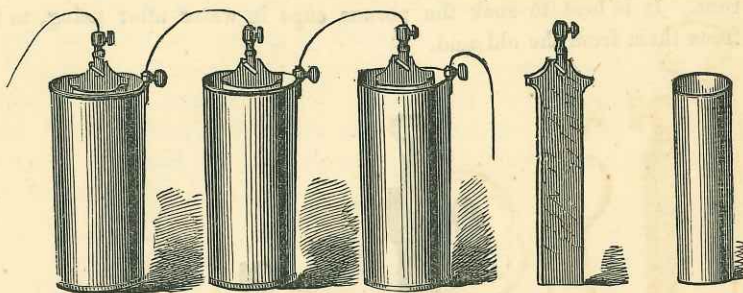


Fig. 25.

Hall's Sustaining Sulphate of Copper Battery.

Fig. 25. The advantage of this battery as a medical agent is very great, as it will remain in constant action from nine months to a year, without replacing, except with water, to replace that which has evaporated.

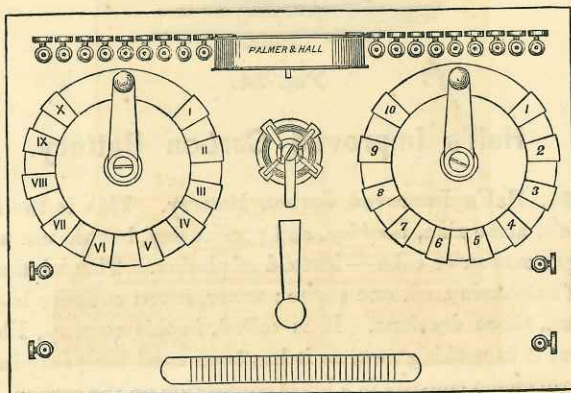


Fig. 26.

Manipulator.

Fig. 26. This is a very ingenious instrument, contrived by Dr. William F. Channing, for bringing any number of batteries into circuit

at pleasure, from one to one hundred cups. It is arranged with a pole-changer, break-piece, key, and clock-work electrotome. This is a very desirable instrument when the constant current is used, as it places the battery in perfect control of the operator. We make several sizes, from one hundred cups to fifteen, the price varying to the number of cups they are intended to connect.

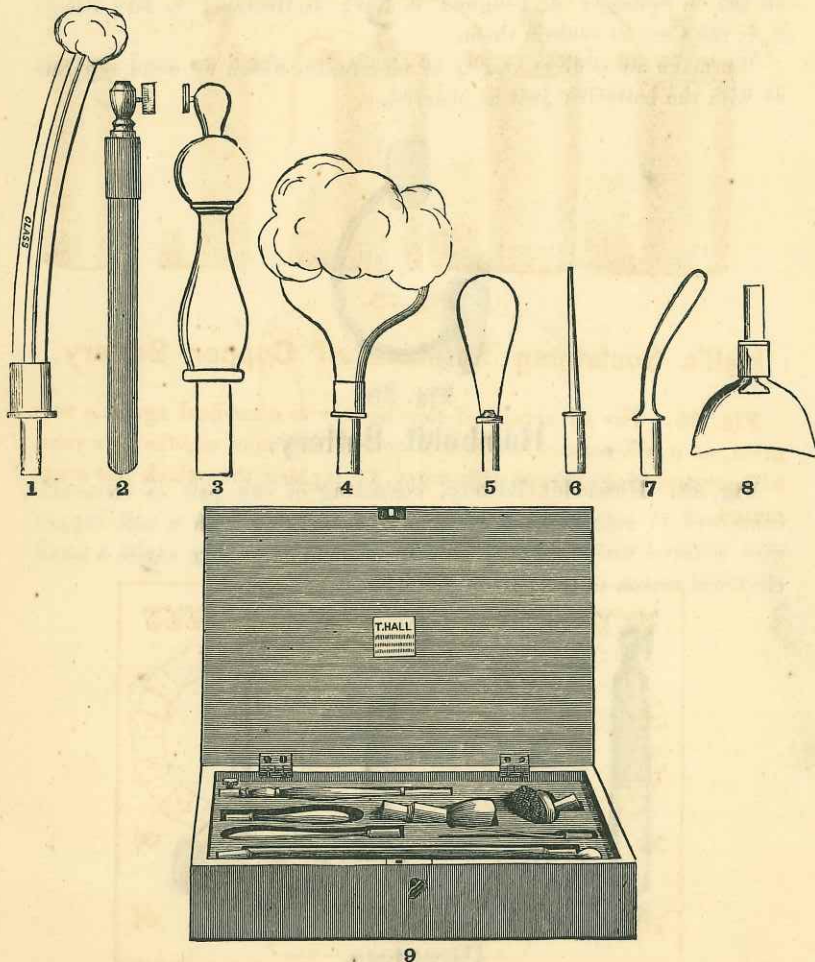


Fig. 27.

Hall's Universal Handles.

Fig. 27. Hall's Universal Handles, embracing the Tongue, Ear, Eye, Rectum, Sponge, Womb, and Vagina Directors, silver-plated. By this arrangement all the directors are fitted to one handle. As only

one of them is used at a time, they need only one insulated handle, which makes the whole set much cheaper than if each had a handle attached. The directors should be covered with cotton flannel moistened with water, when in use, as this will prevent that burning sensation so disagreeable to patients. In the eye-cup tepid water must be used.

1. Womb; 2. Vagina; 3. Insulated Handle, into which the directors all fit; 4. Sponge; 5. Tongue; 6. Ear; 7. Rectum; 8. Eye Glass; 9. is the Case to contain them.

We make an endless variety of electrodes, which we send separate or with the batteries just as ordered.

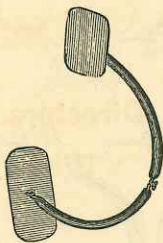


Fig. 28.

Humboldt Battery.

Fig. 28. Humboldt Battery, consisting of one pair of elements, composed of zinc and silver, connected together with a soft copper wire covered with rubber. This instrument is used to excite a small electrical action to the part of the body it is applied.



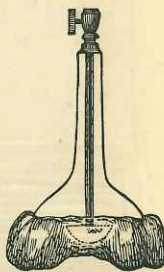
29.



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31.



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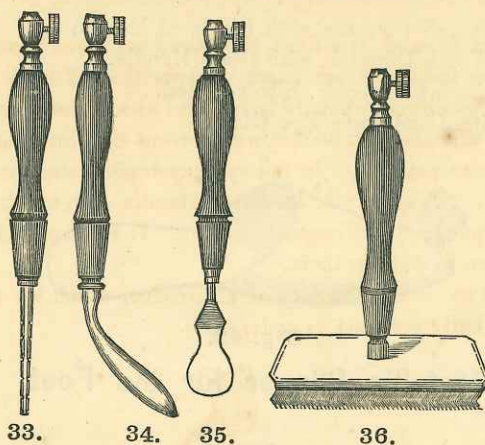
Directors.

Fig. 29. Director for the Hand. German silver, with Insulated Handle.

Fig. 30. German Silver Handle.

Fig. 31. Silver-plated Surface Director, with Insulated Handle.

Fig. 32. Sponge Director, with Glass Handle.



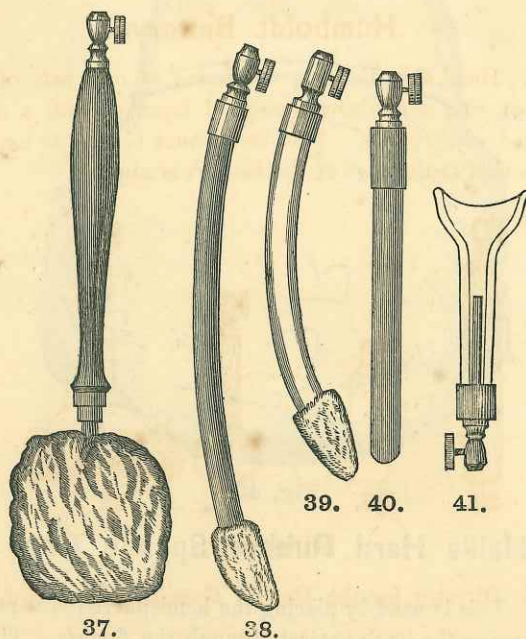
Directors.

Fig. 33. Ear Director, silver-plated, with Insulated Handle.

Fig. 34. Rectum.

Fig. 35. Tongue.

Fig. 36. Scalp.



Directors.

Fig. 37. Flat Sponge Director, with long Insulated Handle. This is very convenient. You can apply it without disrobing the patient.

- Fig. 38.** Womb Director, with Insulated Handle
Fig. 39. Womb Director, with Glass Handle.
Fig. 40. Vagina Director, Silver-plated.
Fig. 41. Dr. Channing's Eye Glass.

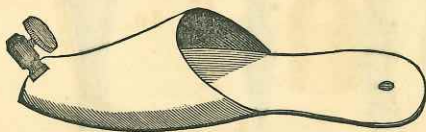


Fig. 42.

Metallic Slipper for the Feet.

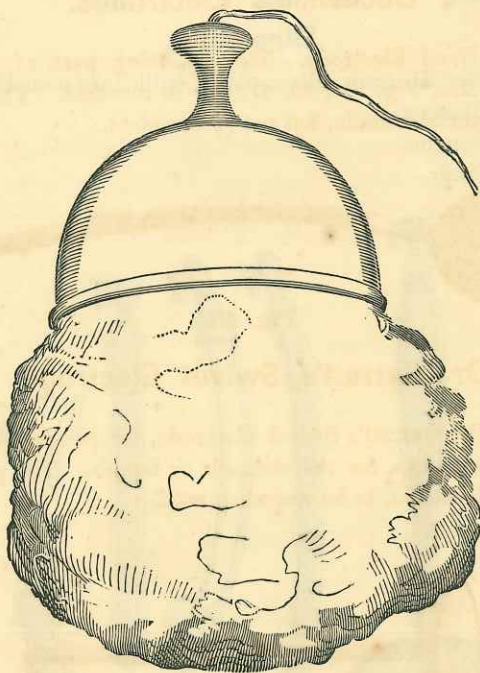
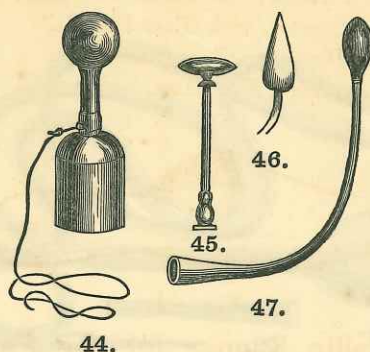


Fig. 43.

Hall's Hard Rubber Sponge Cup.

Fig. 43. This is used by placing the hemisphere in the palm of the hand, and letting the knob project through the fingers. The sponge is fastened in the cup by a spring. By this arrangement the sponge can be taken out of the cup and washed, which is very desirable.



Duchenne's Electrodes.

Fig. 44. Hand Electrode. The insulating part of this handle unscrews, so that Figs. 45, 46, 47, can be attached. This is similar to Hall's Universal Handle, but not so complete.

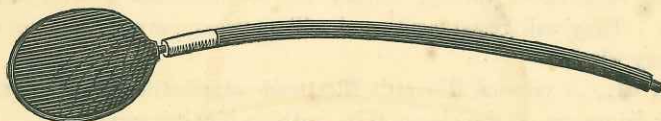


Fig. 48.

Dr. Garratt's Swivel Electrode.

Fig. 48. Dr. Garratt's Swivel Electrode, for passing down inside of the dress of ladies, for the stomach or bowels. The pad is metal covered with buckskin, to be wet when used.

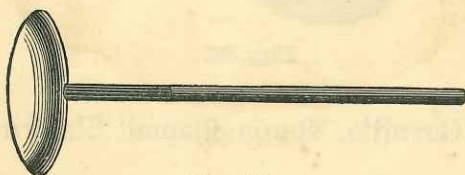


Fig. 49.

Egg and Stem Handle.

Fig. 49. The Egg and Stem Intra-Uterine Galvanizer. The Egg is made of metal, silver-plated. The Stem is all of zinc, insulated one third of its length.

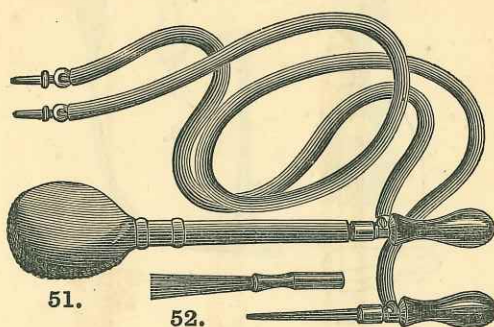


Fig. 50.

Rubber Connecting Cords.

Fig. 50. Hall's Insulated Flexible Conducting Wires. They are covered with rubber tubing, so they can be immersed entirely under water. They will resist acid, and will outwear several pairs of the ordinary wires.

Fig. 51. A view of Garratt's Electrode attached to the conductors simply by means of the elastic tube, without binding screws.

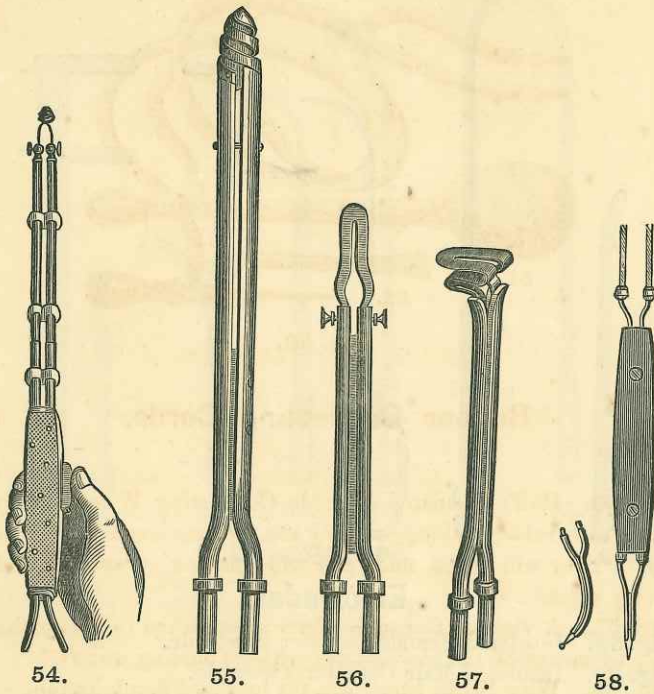
Fig. 52. Wire Brush Electrode, for localized faradaization.



Fig. 53.

Dr. Garratt's Spoon-Shaped Electrode.

Figs. 51 and 53. Dr. Garratt's celebrated Spoon Electrode, composed of a rubber spoon-shaped insulator, lined with metal and fitted with a sponge. Used for most general applications of electricity.



Cauterizers.

Figs. 54, 55, 56, 57, 58. Improved Electro-Surgical Instruments for Galvano-Cauterization. They are so arranged that by merely pushing the knob, after placing the instrument in the right position, the current is let on. The battery used in connection with these instruments is composed of four elements of Bunsen's, composed of zinc and carbon, giving a powerful quantity-current. It is let on the instruments by means of large flexible wires.

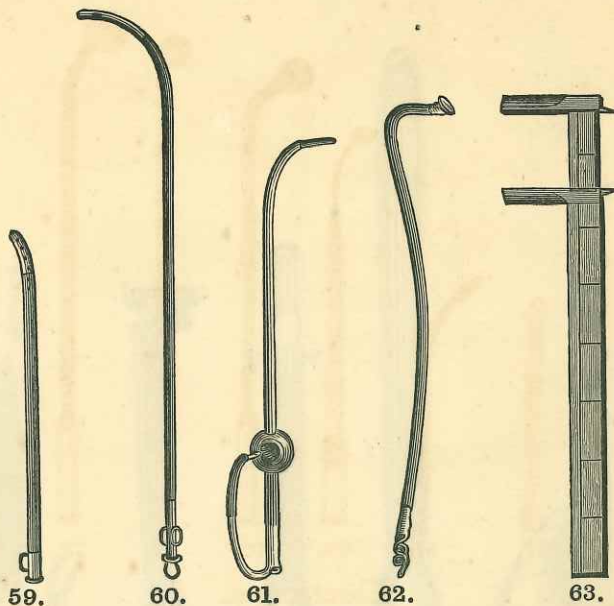
Fig. 54. For cauterizing the gums, throat, &c.

Fig. 55. For cauterizing the vagina.

Fig. 56. Platina knife.

Fig. 57. For cutting lunars, &c.

Fig. 58. For cutting small ligament.



Electrodes.

Fig. 59. Insulated Female Catheter Electrode.

Fig. 60. Insulated Male Catheter Electrode.

Fig. 61. Insulated Flexible Electrode, with gold tip, for reaching the opening of the Eustachian tube from beneath the palate.

Fig. 62. Insulated Electrode, for electrifying the pharynx, glottis, or chordæ vocales. The end of the handle springs into a socket, to make and break contact.

Fig. 63. Æsthesiometer; to aid in the test of lost sensibility.

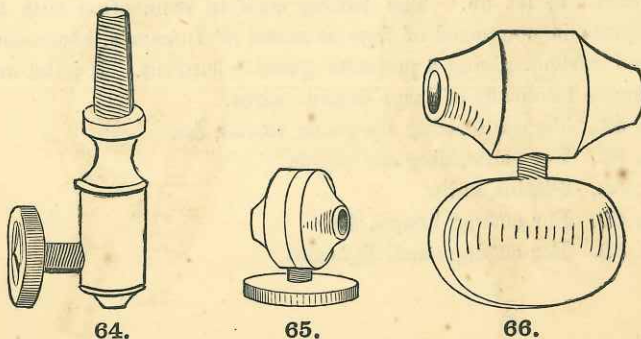
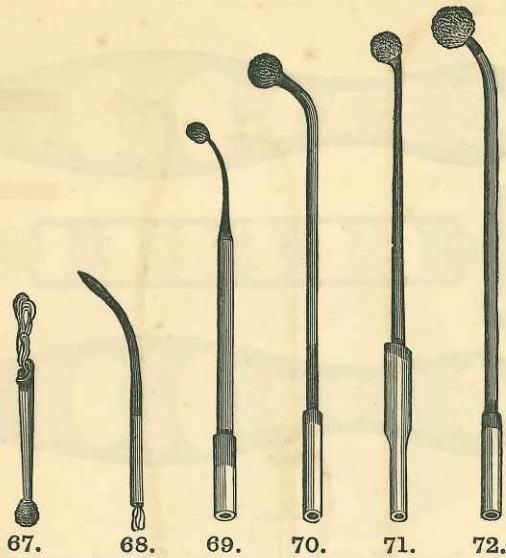


Fig. 64, 65, 66. Connecting Cups. Used for connecting wires and batteries together.



Electrodes.

Fig. 67. Dr. Garratt's Ivory and Sponge Ear-Cup.

Figs. 68, 69, 70, 71, 72. Small Sponge-tipped Insulated Electrodes, for localizing accurately, as over a nerve trunk, or for tracing small muscles.

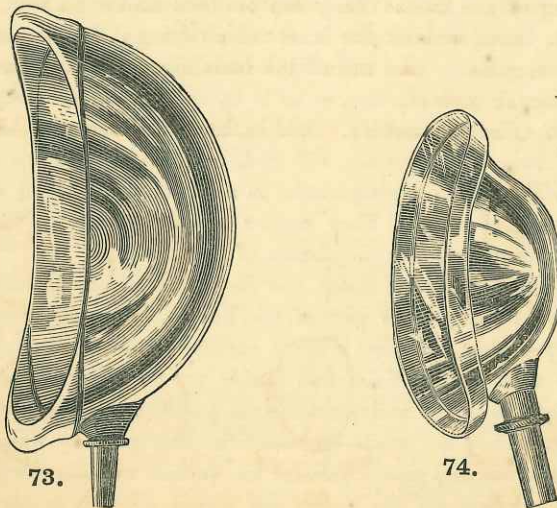


Fig. 73. Dr. Garratt's Electrical Cupping-Glass.

Fig. 74. Small Size Electrical Cupping-Glass.

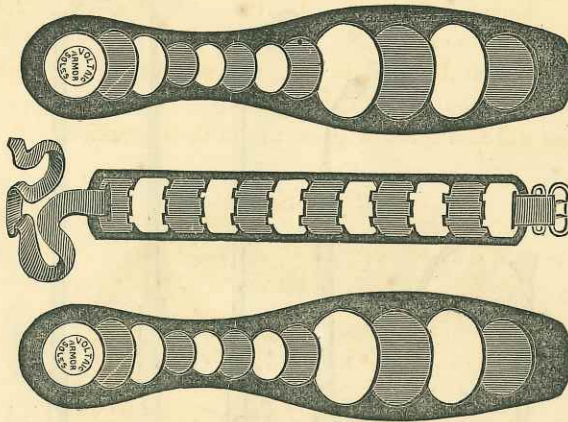


Fig. 75.

Hall's Patent Voltaic Armor Soles and Bands.

Fig. 75. Hall's Patent Voltaic Armor Soles and Bands, for the cure of cold feet, rheumatism, neuralgia, dropsy, paralysis, cramps, stiffness of the joints, asthma, hips and spine, and all nervous diseases.

These Soles and Bands are made on the principle of the voltaic pile, and are perfectly flexible. They can be worn under the feet, or any part of the body, without the least inconvenience, for they are constructed with positive and negative metals like scales of armor, the ends terminating with elastics, so as to fit any part of the body. For cold feet, they are invaluable. Ladies, and all persons of sedentary habits who have little exercise, will find, on applying them to the feet, that they will produce a perspiration in a few minutes, which will continue as long as worn. They impart a healthy tone to the whole system, by stimulating the circulation of the blood.

The so-called Galvanic Soles and Belts, which are so constructed that the foot or any other part of the body only touches one metal, are entirely useless, as there is not a particle of electricity generated.

Hall's Voltaic Armor Soles and Bands are so constructed that the foot, or any part of the body, touches the positive and negative metals alternately. They are made on scientific principles, by which a constant galvanic current passes through the person wearing them.

Persons sending for the Soles, will please give the number of the shoe they intend putting them in; or, if Bands, please send a measure of the body they wish to wear them on.

Price of Soles, . . .	\$1.50 per pr.	Bands for the Thighs, \$2.50 each.
Bands for the Wrist, .	1.00 each.	" " Arm, . . 2.00 "
" " Knees, . 2.00 "		" " Breast, . 5.00 "
" " Calves, . 2.00 "		" " Waist, . 5.00 "

They can be sent by mail to all parts of the United States and Canadas, on reception of the above prices.

Physicians will find them of great use in their practice.

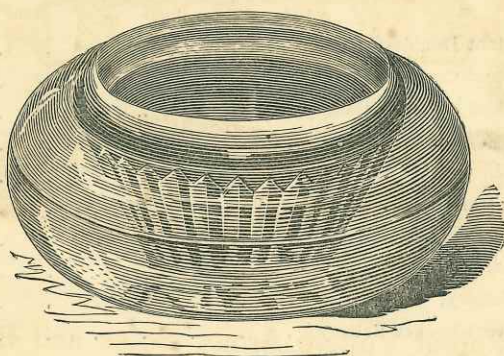


Fig. 76.

Hall's Glass Casters.


The above cut represents Hall's Glass Casters, for Insulating Bedsteads, &c. These consist of pressed glass, about three and one half inches in diameter, and one and one half inches thick, with a cavity to allow the feet of the bedstead to rest in. By being smooth on the bottom, they will slide on the carpet much better than the metallic casters. It is found that by insulating the bedstead, and removing it from the walls, so that it will touch nothing but the glass casters, it will remedy that languid feeling that most persons experience on rising in the morning. The theory is, that there are electrical currents constantly escaping from the body to the ground; by insulating the bedstead they cannot escape, and consequently the body retains a larger amount of electricity, which is the vital power. They are also used as a protection from lightning. During a thunder shower, if the bedstead is insulated, and removed from the walls so that it does not touch anything but the glass casters, a person lying on it is perfectly safe. It is the up-stroke that generally strikes: and as electricity will always follow the best conductor, the instant it meets the glass it passes along on the floor to the wall and escapes. They not only serve to insulate, but they present a very beautiful appearance in contrast with the furniture and carpet.

Price \$1.00 per set of four.

INDEX.

NUMBER	PRICE
1. Hall's Patent Double-Current Reversible Battery,	\$18.00
2. Hall's Patent Constant Battery,	16.00
3. Hall's Patent Constant Battery, with Forceps,	16.00
4. Forceps,	2.50
5. Footboard,	2.00
6. Insulated Handle,	1.50
7. Dr. Page's Portable Battery,	16.00
8. Single Coil Instrument,	25.00
9. Family Battery,	12.00
10. Hall's Patent Pocket Battery,	12.00
11. Double Helix and Vibrating Electrotome,	10.00
12. Self-sustaining Battery,	5.00
13. Key for Letting on Currents,	3.00
14. Hall's Petit Battery,	25.00
15. Prof. Wells's Battery	17.00
16. Hall's Portable Magnetic Machine	12.00
17. Large Machine for Hospitals,	50.00
18. Electrical Plate Machine,	35.00, 45.00, 55.00, 65.00, 75.00
19. Leyden Jar,	2.50
20. Insulated Stool,	4.00
21. Discharger,	2.00
22. Ruhmkoff's Battery,	25.00
23. Series of Twelve Grove's Battery,	36.00
24. Hall's Improved Carbon Battery,	3.00
25. Hall's Sustaining Sulphate of Copper Battery, per cup,	2.00
26. Manipulator,	10.00, 15.00, 20.00, 25.00, 30.00, 50.00
27. Hall's Universal Handles, in box,	9.00
28. Humboldt Battery,	2.00
29. Insulated Handles, per pair,	2.00
30. German Silver Handle,	2.00
31. Surface Director,	2.00
32. Insulated Sponge Handle,	1.50
33. Ear Director,	1.00
34. Rectum,	1.00

NUMBER	PRICE
35. Tongue,	\$1.00
36. Scalp,	1.25
37. Flat Sponge Handle,	1.50
38. Womb Director,	1.50
39. Womb Director, with Glass Handle,	1.50
40. Vagina Director,	1.50
41. Dr. Channing's Eye-Glass,	1.25
42. Metallic Slipper,65
43. Hall's Hard Rubber Sponge Cup,	1.50
44, 45, 46, 47. Duchenne's Electrodes, per set,	5.00
48. Dr. Garratt's Swivel Electrode,	2.00
49. Egg and Stem Handle,	2.00
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